FINAL PROJECT HANDBOOK

A central part of your Master's degree is the culminating requirement in the form of a comprehensive study. This guide is designed to give you information about the process of developing a research proposal and guidelines for the development of the writing product required in this Master, a research research.

It is expected that training for students of the Master in Decision Making and Innovation will culminate in the production of a research research that evidences originality, appropriate organization, clarity of purpose, critical analysis, and accuracy and completeness of documentation.

Goals

- To gain research experience using quantitative or qualitative research methods in any field related to one of the 17th Sustainable Development Goals (SDG).
- To be able to apply research experience with sensitivity, understanding, and appreciation of the differences of culture, race, ethnicity, class, gender, sexual orientation, disability, and age.
- To ensure that once you graduate, you will be a competent consumer of research.

Learning objectives. Students will demonstrate, through the written production of a Study, the ability to:

- Select, conceptualize, and organize an appropriate researchable theme.
- Design a research to assess relations for individuals, families, groups, or organizations; and, competently draw conclusions from observing them.
- Understand ethical issues pertaining to research.
- Appropriately identify, select, and implement research concept(s) and methods in diverse settings related to the SDGs.
- Become self-reflective in the research and writing process so as to be able to organize the work, to structure time, and to successfully problem solve.

- Prepare a research (Trabajo Fin de Máster - TFM) with the quality of writing, format, and documentation that meets the styles formats appropriate for shelving in the UAH repository.

Steps in completing a Study in the Master in Decision Making and Innovation. Typically, you will follow these steps. We have provided information regarding each step below:

1. Enrollment.
2. Tutor Assignment.
3. Determine the topic of your Research.
4. Develop the proposal of your research and the work plan.
5. The delivery proposal and registration process.
6. Start your research. Only once you have been notified permission from the Master's Committee to conduct your research.
7. The written product format.
8. The approval process.
9. Contents of the research paper.

1. **Enrollment.**

Be admitted to classified graduate standing by applying to the UAH in the appropriate graduate degree curriculum.

2. **Tutor Assignment.**

The Master's committee will assign you a tutor. The role of the tutor is to work closely with you every step of the way. Specifically your tutor will help guide the development of your research question, assist you as you write your study proposal, supervise the implementation or your work (i.e., gathering study data), and approve the final draft of the written study. It is your responsibility to stay in contact with your tutor on a regular basis, keep up with deadlines, and follow through with your commitments. Your tutor will provide you with feedback on your writing and the organization of your product, but it is not the role of the tutor to copy-edit your product for you. Thus, before you turn in any "draft" you should make sure it is ready to be evaluated. If a draft is filled with spelling, grammar, and/or style errors you can expect that your tutor will return it without substantive comments. Regardless of how confident you are in your written product, you will want to give yourself ample time to turn in drafts of each section of your product, get feedback, and revise.

3. **Determine the topic of your Research.**

In consultation with your tutor, determine whether the topic you are interested in would best fit a research. A paper is the written product of a systematic research of a significant problem. It clearly identifies the problem; states the major assumptions; explains the significance of the undertaking; sets forth the sources for, and methods of gathering information; analyzes the data; and offers a conclusion or recommendation. The product must evidence originality, critical and independent thinking, appropriate organization and format, clarity of purpose, and accurate and thorough documentation.

Some examples of types of studies are outlined below:

- A descriptive research study examining how water quality could be improved by reducing pollution and minimizing release of hazardous chemicals.
- A study examining the effectiveness of an innovative method to increase resource-use efficiency and greater adoption of clean technologies.
- A study on the usage of the innovative educational methods to ensure early childhood development in developing countries.
- A qualitative study on the resilience of children in vulnerable situations and its relation with poverty.
- A study evaluating outcomes of supported employment programs within one regional center's service area.

4. **Develop the proposal of your research and the work plan.**

Before beginning the research you are expected to complete a Proposal and Work Plan that clearly specifies what your culminating activity will involve. A sample proposal form is provided in Exhibit A. You must complete this form by the deadlines indicated on page 1 of your Final Project unit within the Online Platform. It is very important to discuss with your tutor expectations on the length of time it will take to complete your research. Part of this discussion should entail what grade you will be able to obtain if you will not be able to complete your research in time and how you will commit for any future deadline.

5. **The delivery proposal and registration process**.

Once your proposal and work plan are delivered, it is necessary to obtain the formal agreement of your tutor and the Master's committee (see Exhibit B).

6. **Start your research. Only once you have been notified permission from the Master's Committee to conduct your research.**

You are ready to begin your research! It is important to plan enough time to complete your proposal, before beginning your work. Once your research study has been organized, the literature review complete, and your methods prepared, you will have a much easier time completing the actual work you have designed to do. While collecting your data or working on your research, keep in touch with your tutor on a regular basis to evaluate progress, discuss your concerns, and make any changes as necessary. Don't expect the tutor to contact you. You will need to take the initiative. Do not wait until it is too late --- this may cause a delay in the completion of your study, or the failure to complete your Master.

7. **The written product format**.

It is a research paper. Your research must follow the format requirements noted below. Ultimately it is the student's responsibility to learn and apply the format requirements and not that of one's study tutor.

Extension: 30 pages (DIN-A4), annexes, cover page, index, and bibliography not included. Extension requirements are not strictly defined. 30 pages length is desired and a shorter report should be indicative of excellence and have the approval of your tutor.

- Font type and size: Arial (11pt).
- Line spacing: 1,15.
- Margins: 2.5 cm on top, bottom, and right side; 3 cm at left side.
- Numbered pages at the bottom of each page.
- Cover page: see Exhibit C
- File Format: PDF

The document should be divided into the standard sections of a research paper. Each section is given a brief heading. Each heading should appear on its own separate line and subsections (sub-headings) should be used as much as possible (follow the designed structure and copy the heading format as done in this handbook).

Overall, the research will have these distinct sections and subsections -headings-:

Title
Author name
Abstract
Keywords
Abbreviations
Introduction
- **Background of the Problem.**
- **Statement of the Research Problem.**
- **Purpose of the Study.**
- **Research questions.**
- **Research objectives.**
- **Theoretical Framework.**
- **Literature Review.**
- **Justification.**
- **Glossary (optional).**

Methodology
- **The study design.**
- **Sampling procedures.**
- **Hypothesis, independent and dependent variables**.
- **Data collection procedures.**
- **Instruments used.**
- **Data analysis approaches.**

Results
Conclusions and Discussion
Acknowledgments (optional)
References
Annexes

8. **The approval process.**

Once your tutor deems your Study to be completed, s/he signs the approval page. Insert the approval page after the cover of your TFM once it is signed by your tutor. Exhibit Approval page.

9. **The development of the research (structure and contents).**

The following describes the structure and the contents of the research. It describes the main sections and subsections. You have to replicate the sections and subsections format in your product - the research paper:

TITLE
Concise and informative to attract the reader's attention. Avoid abbreviations

AUTHOR NAME AND AFFILIATION
Indicate the given name and family name of the author.

ABSTRACT
The Publication Manual of the American Psychological Association (APA, 2010) indicates that the abstract can be the most important single paragraph in a study. The abstract has to be accurate, readable, and concise. An abstract is a summary of your research in no more than 300 words. The abstract should state briefly the purpose of the research, the principal results, and major conclusions. As well, you have to indicate the methods used to obtain the findings. You have to finish the abstract mentioning the practical implications of the study and what specific audiences will benefit from it.

An abstract is often presented separately from the research, so it must be able to stand alone. For this reason, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself. The Abstract is the last section to write because you have to develop the research process in its entirety.

KEYWORDS
Immediately after the abstract, provide a maximum of 6 keywords avoiding general or plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. Beforehand, check the accuracy of your choices in the search engine that better fits the topic of your research. These keywords will be used for indexing purposes in different academic databases and specialized repositories such as: Google Scholar, Microsoft Academic, Dialnet, Redalyc, SciELO, ERIC, DOAJ, ScienceResearch, Scopus, Teseo, PubMEd, JURN, RefSeek, ResearchGate, REDIB, LA Referencia.

ABBREVIATIONS
Define abbreviations that are not standard in the field to be placed on the first page of the research. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in here. Ensure consistency of abbreviations throughout the research.

INTRODUCTION

The researcher has the task of presenting and defining the problem so that it is clearly understood, is not trivial, and can be investigated using the tools of commonly accepted research methods. In this regard, this section has been divided into nine possible subsections that, taken as a whole, meet the criteria for a well-articulated presentation of the problem that students are studying.

This section introduces the reader to the general problem. It tells the reader what the problem is. Subjective elements such as personal experience or anecdotal materials may be used to illustrate the nature of the problem, its extent, manifestations and seriousness. The idea is to get the reader interested and involved in the general world of the problem. What is it that you are going to be studying? Is it electric vehicles' lack of charging infrastructures in Spain?, what's the role of sustainable tourism in reducing plastic pollution, what glass ceiling barriers persist today? or what? At the end of this section the reader should have a clear idea of what the problem is.

The Introduction has several subsections: **Background of the Problem, Statement of the Research Problem, Purpose of the Study, Research questions, Research objectives, Theoretical Framework, Literature Review, Justification..**

Background of the Problem *(from 2 to 3 pages)*

This subsection has two purposes: (a) to begin to be more specific about the problem; and, (b) to convince the reader that what you are studying is truly a problem. Use evidence and logical arguments to assemble materials to document that what you are studying is in fact a problem: where did it come from; how long has it been with us; how big is it; how extensive it is; what are the costs of not resolving the problem, etc. It helps to relate your specific research problem to a larger, more general problem; amass evidence to show that the more general problem is indeed a problem; then show that your specific problem is a subset of the more general problem. Do not take it for granted that the reader is automatically going to agree with you that what you are studying is a problem. Cite sources from your library research and from interviews with experts having knowledge of the problem to document your assertions. Be sure to provide references (citations) for all facts. In order to construct an accurate and complete reference list and format it correctly in APA style please refer to the reference section in the latest edition of the APA Publication Manual. Here we offer you an example, (..) The number of professionally qualified women in education and business has been constantly increasing in the last decades but their presence in senior positions is still quite low. This phenomena, called glass ceiling effect, implies that gender is

stronger at the top of the hierarchy than at lower levels and that these disadvantages become worse later in a person's career (Cotter et al. 2001) and still persist as an international social reality in all sectors of the economy (Hymowitz and Schellhardt 1986; Morrison and von Glinow 1990).

Statement of the Research Problem *(from 1 to 2 paragraphs)*
Up to now the researcher has talked about the general problem; now, the researcher will state what aspect of the general problem s/he is going to be dealing with in the research study. This is the research problem. State it in a short, concise manner not more than a paragraph or two. Although it is all right to argue that the research problem is the lack of something or a deficiency in something, it is the underlying reason or impact that leads to the lack of research. Here we offer you an example, 'In the past ten years, the 'gig economy' has become an increasingly important segment of the labour market in Spain. Under-30s are more likely to engage in freelance, contracted or zero-hour work arrangements instead of traditional full-time jobs. Research on the reasons for and consequences of this shift has focused on objective measures of income, working hours and employment conditions, but there has been little work exploring young people's subjective experiences of the gig economy.'

Purpose of the Study *(from 1 to 2 paragraphs)*
Tell the reader what your research proposal is going to do about providing a resolution for the identified research problem. "This study aims to …" You have to convey the purpose statement -the aim of your study- in no more than two sentences. In doing so, your intent is built on the problem and later is refined into specific questions (the research objectives). You have to offer a rationale of the content perspective providing the reader an anchor to use to understand the overall text before breaking it down the methods to study the research problem. Here we offer you some qualitative and quantitative examples:

Example 1 – A Purpose Statement in a case Study
This research aims to determine whether misogynist or sexist beliefs related to sexual health still exist in a working group, as the latter is considered an important link when talking about well-being in general terms. It is important to highlight that, nowadays, in countries like Spain, misogyny does not present itself in such a direct and hostile way as it exists in other countries or as it was seen in the past. Even so, it is important to assess whether misogynist thoughts and attitudes focused on the sexual plane still exist, considering that misogyny has not been completely extinguished and that misogynist attitudes can still be observed in Spain today.

Example 2 – A Purpose statement in a Grounded theory study

The present research describes a qualitative study of the career development of 15 prominent, highly achieving young women -graduated in 2013 in the midst of the Spanish economic crisis- across engineering professional fields. Our overall aim in the study was to explore critical influences of being graduated at times of crisis on the career development of these women, particularly those related to their attainment of professional success.

Example 3 - A Purpose Statement in a phenomenological research

The purpose of this study is to test the efficacy of three teaching methods which are Flipped Classroom, Inquiry Education and Collaborative Method in terms of its influence on academic performance for undergraduate students in Spain.

Research questions *(1 page)*

Novice researchers are often overwhelmed and bewildered when trying to convert what they see as relevant issues from practice into a study. Developing a research question is an interactive and inductive endeavour that takes place over time.

> *Quantitative research questions.* These tend to be precise and can be categorised as 'descriptive', 'comparative' or 'relationship'. Appropriate questions should highlight the population, dependent variables and design (descriptive, correlational, causal-comparative, quasi-experimental), and the link between the research question and the design (Onwuegbuzie and Leech 2006, Kloda and Bartlett 2013). In comparative/relationship research questions, independent variables should also be highlighted.

Table 1 Types of quantitative research question

Type	Question
Descriptive	■ Seeks to quantify responses to one or more variables ■ Often begins with 'What is…?' or 'What are…?'
Comparative	■ Seeks to compare two or more groups for some outcome variable ■ Often uses words such as 'compare' ■ When it involves two groups it can be written as: 'What is the difference in (dependent variable) between (group 1) and (group 2)?' ■ Can be extended to three or more groups by replacing the word 'between' with 'among' ■ Can be causal in nature, such as the effect of X on Y ■ Such causal questions are implicitly comparative in nature when a comparison is made between a group where X is involved and a group where X is not involved
Relationship	■ Is concerned with trends between or among two or more variables ■ Often uses words such as 'relate', 'relationship', 'association' and 'trend' ■ Relationship questions involving two variables usually can be written using: 'What is the relationship between (independent variable) and (dependent variable) among (population)?' ■ Can be extended to three or more variables by replacing the word 'between' with 'among'

Hulley et al's (2007) criteria for quantitative research are:

- Feasible.
- Interesting.
- Novel.
- Ethical.
- Relevant.

These criteria are collectively known as FINER.

A specific format should be considered when developing specific research questions (Farrugia et al 2010). Richardson et al's (1995) format for quantitative research is:

- Population, patient, problem.
- Intervention.
- Comparison.
- Outcome.

This format is known as PICO.

Qualitative research questions. These are flexible, adaptable and non-directional (Creswell 2013). They seek to determine or discover a process, or define experiences. They are normally used to try to understand particular educational, familial or social processes or experiences that happen in a specific location and/or context (Marshall and Rossman 2011). They usually describe and address 'what' and 'how' questions, avoiding words such as 'affect', 'influence', 'compare' and 'relate'.

Like quantitative questions, qualitative questions link to research design, including historical/narrative, case study, ethnography, phenomenology, grounded theory and autoethnography. Generally, these questions are non-directional and use words that state that the study will: 'discover' (grounded theory), 'explain' or 'seek to understand' (ethnography), 'explore a process' (case study) or 'describe the experiences' (phenomenology).

Cooke et al's (2012) characteristics of qualitative research are:

- Sample
- Phenomena of interest
- Design
- Evaluation
- Research type

These characteristics are collectively known as SPIDER. Researchers informed by these criteria and characteristics are likely to identify important aspects of research questions and develop successful research projects (Farrugia et al 2010).

A specific format should be considered when developing specific research questions (Farrugia et al 2010).Kahn et al's (2003) format for qualitative research is:
Population, problem.
Exposure.
Outcome or theme.
This format is known as PEO

Types of qualitative research question

Type	**What it does**
Contextual	Describes the form or nature of what exists
Explanatory	Examines the reasons for or associations between what exists
Evaluative	Appraises the effectiveness of what exists
Generative	Provides new ideas, aiding the development of theories, strategies or actions
Ideological	Advances the ideology of a position
Exploratory	Investigates a phenomenon where little is understood
Explanatory	Explains a phenomenon
Descriptive	Tries to describe a phenomenon
Emancipatory	Engages in social action related to a phenomenon

*Mixed Methods research questions***.** A mixed methods study should start with a mixed methods research question, to shape the methods and the overall design of a study. Because a mixed methods study relies on neither quantitative or qualitative research alone, some combination of the two provides the best information for the research questions and hypotheses.

Include a mixed methods research question that directly addresses the mixing of the quantitative and qualitative strands of the research. This is the question that will be answered in the study based on the mixing (see Creswell & Plano Clark, 2007). This is a new form of question in research methods, and Tashakkori and Creswell (2007, p. 208) call it a "hybrid" or "integrated" question. This question could either be written at the beginning or when it emerges; for instance, in a two-phase study in which one phase builds on the other, the mixed methods questions might be placed in a discussion between the two phases. This can assume one of two forms. The first is to write it in a way that conveys the methods or procedures in a study (e.g., Does the qualitative data help explain the results from the initial quantitative phase of the study? See Creswell & Plano Clark, 2007). The second form is to write it in a way that conveys the content of the study (e.g., Does the theme of social support help to explain why some students become bullies in schools? (see Tashakkori & Creswell, 2007.)

Research objectives *(from 2 to 3 paragraphs)*

Determining the research's purpose leads naturally to determining its objectives. Research objectives are more specific than the aim and relate directly to the research question (Grove et al 2014, Parahoo 2014). They may be divided into 'primary' (bound to be achieved) and 'secondary' (incidental) objectives (Newell and Burnard 2011), and should be: closely related to the research question, cover all aspects of the problem, specific, ordered in a logical sequence, achievable, take into consideration the available resources, including time, and mutually exclusive of each other. They should also be stated using action verbs that can be evaluated, such as 'to describe', 'to identify', 'to measure' or 'to compare'.

Johnson and Christensen (2014) offer five typical research objectives: 'exploration', 'description', 'explanation', 'prediction' and 'influence'. Qualitative and quantitative research studies can be linked to one or more of these five research objectives (Onwuegbuzie and Leech 2006):

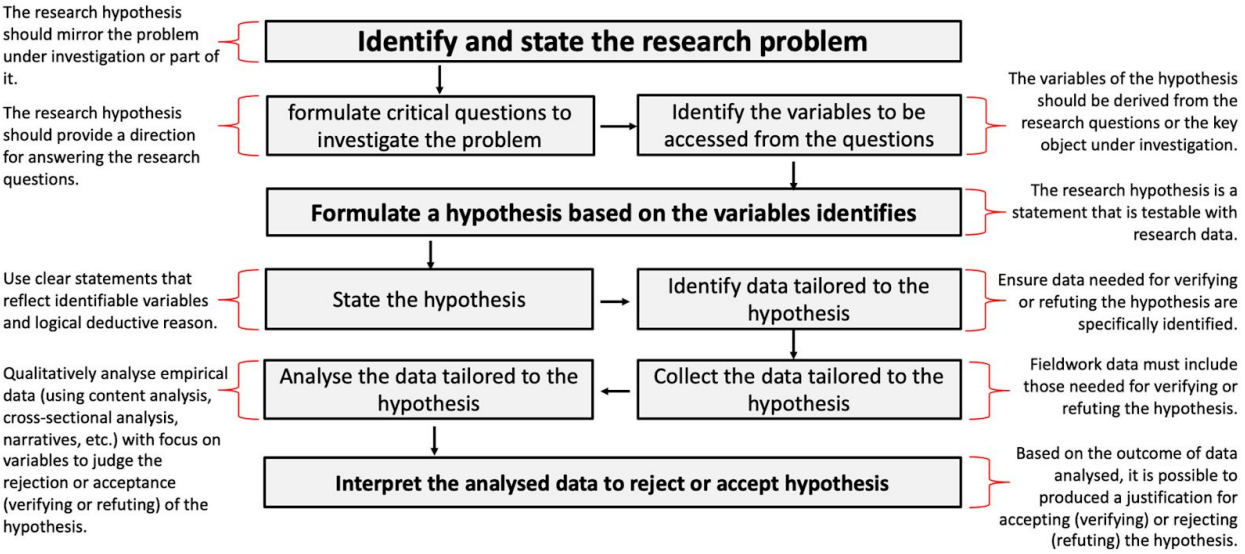
- ‘Exploration’ involves using mainly inductive methods to discover a concept,construct, phenomenon or situation and advance understanding, hypotheses or generalisations.
- ‘Description’ involves identifying and describing the antecedents, nature and a etiology of a phenomenon.
- ‘Explanation’ involves developing theory for the purpose of explaining the relationships among concepts or phenomena and determining reasons for the existence of events.
- ‘Prediction’ refers to using pre-existing knowledge or theory to predict what will occur at a later point in time.
- ‘Influence’ relates to manipulation of the setting or variable to produce an anticipated outcome.

Doran’s (1981) criteria can be applied when setting research objectives.

These are:

- Specific: be exact about what you are going to accomplish.
- Measurable: quantify the objectives.
- Appropriate: align with the needs of the target audience.
- Realistic: do you have the resources to make the objective happen?
- Time specific: state when you will achieve the objective.

These criteria are collectively known as SMART. It should be acknowledged that there is some debate as to whether research aims and objectives are required for all studies, and whether either or both are necessary. This is evident in published studies where only the research aim or the objectives are identified. This may be because only one was set or only one was identified in the published work.



Theoretical Framework *(from 2 to 3 pages)*

Describe the research problem using *one or several* theories or paradigms. First, select the appropriate theories or paradigms and write about them with enough detail so that the reader has a clear understanding of the theories/paradigms. Then, using the language of the theory/paradigm describe the research problem.

Here we offer you an example (partial text),'Some studies stated that green building offices lead to greater productivity, lower absence, and happier employees (Abbaszadeh et al., 2006; Armitage et al., 2011; Liang et al., 2014). In contrast, others argued that there is no significant relationship between green buildings and the occupants' satisfaction with Indoor Environmental Quality (IEQ) or that the influence is quite small compared to conventional offices (Paul & Taylor, 2008; Thatcher & Milner, 2012). Leaman and Bordass (2007) and Gou et al. (2013) also concluded that the indoor environment of green buildings was not always performing highly, but that users tended to be more tolerant and forgivable in green buildings. Other research of Liang et al. (2014) explained that occupants were more tolerant with IEQ when concerning energy consumption. These studies proved that green buildings, such as LEED or Green Star certified buildings do not always support high level of user comfort and satisfaction. (...) The majority of scholars have explored the relationship between environmental influences and occupants' well-being by focusing on the range from physical-related well-being, such as indoor environmental quality (IEQ) (Humphreys, 2005; Levin, 2003; Mofidi & Akbari, 2016; G. Newsham et al., 2009; Wargocki et al., 2012), to psychological-related well-being.'

Literature Review *(from 6 to 8 pages)*
The purpose of this section is for the researcher to tell the reader what others have found out (or said or conjectured) about the particular problem s/he has chosen to do his/her research on or about a similar problem (the results of which s/he can, by analogy, apply to the problem). Typically, the literature review starts with broad concepts that orient the reader to the topic at hand. It then becomes progressively more specific.

Organize the findings in a narrative style. Do not present the findings in the form of an annotated bibliography.

Be sure to provide page numbers for direct quotations. Quotations should be used sparingly! They should be used to highlight a point, and only when the author's exact words are needed. You should use your own words to summarize material from the literature. Never use phrases like "The author *states* or *says*" without providing an explanation of why the author is "saying" the quoted material and pointing out what its relevance to the theme is supposed to be. Review *current* literature (typically within the last 10 years). Most of the researcher's literature review should come from the periodical literature -journals-. Only some should come from books and the Internet. This is the literature that will help orient your readers to the broader topic(s) under study. Tutors will not accept material that uses more than a few quotations, uses them inappropriately, or that is a close paraphrase of a referenced work There are no specific requirements for the length of this subsection or the number of sources that need to be considered. However, our experience has found that the Review of the Literature will generally have a minimum of 10 appropriate references.Please do not give your tutor anything to review that does not meet these minimum requirements! The tutor will, of course, be more than happy to meet with the student to give feedback on draft material to make sure the student research is on the right track, and/or to help the student search for appropriate literature to review.

Finally, it is essential to mention that the UAH makes the policy on plagiarism very clear. This policy is taken very seriously in this Master. You may not copy another person's work in any amount. Quotations and their citations are discussed above and in the *APA manual*. Plagiarism is easily detected. If you have any questions about what this means or what constitutes plagiarism, talk to your tutor and consult the University's policy statement.

Here we offer you an example (partial text), 'Many studies have already tried to find a relationship between EI (empathy) and other factors in students. Lozano et al. (Lozano & Etxebarria, 2007) studied how tolerance in

adolescents is affected by self-esteem, empathy and the concept of human being. The used instrument was the IRI (will be explained later in the methodology section). The results confirmed the hypothesis, empathising the need to pay attention to empathy and self- esteem in educative interventions.

Another precedent in studying empathy in children was performed by Auyeung et al. (Auyeung et al., 2009), in order to evaluate sex differences in typical development in autism spectrum conditions. The tool used for the study was the SQ-EQ (see methodology section).

Gorostiaga (Gorostiaga, Balluerka, & Soroa, 2014) studied empathy in the academic ambit and its relationship with emotional intelligence. The instrument was an adaptation of TECA test in Euskera (also for the present work an adaptation of TECA has been done). The study found relationship between empathy and emotional intelligence and proved that TECA is a useful instrument to measure empathy in children, adolescents and youth in the educational context.

Another example of an empathy study using TECA is the work by Arraigada, Contuliano and Díaz (Arriagada Cortés, Contuliano Villarroel, & Díaz Rojas, 2014). This work studies the influence of socio-familiar environments on the empathic response of children, but it did not find any significant effect.

Other researches compared empathy levels of children depending on their attendance at institutions with different teaching methodologies. Acevedo et al. (Acevedo Ponce de León & Carrillo Árcega, 2010) researched empathy in children from traditional and Montessori pedagogy. Esturao et al. (Esturao, Galvagno, & Elgier, 2017) compared empathy in students from traditional and Waldorf pedagogy using IRI, and were able to find a positive influence of Waldorf methodology.

Emotional Intelligence in students

The literature confirms the relevance of empathy in academic interventions and the usefulness of TECA to measure empathy in children and teenagers in an educational environment. The works presented so far investigated the relationship of empathy with other factors, its variation according to gender, how it is influenced by a familiar environment, or how empathy levels change with different pedagogies such as Montessori or Waldorf.

But empathy may also be influenced by other active pedagogic strategies, such as teamwork, education in values and multicultural environments.

Active education methodologies to work emotional competences are already a concern in many fields.

One of those fields are Universities, in order to provide their students not only academic knowledge, but also social and emotional competences, creativity, teamwork, problem solving, empathy, effective communication, leadership or self-esteem (Galindo, s. f.). The publication by Galindo summarized the work of several researchers, all of which agree that teamwork is fundamental for such development. One methodology focused on teamwork is PBL (Project based learning).

According to the students, that kind of collaborative work allows them to integrate better with their classmates, and they perceive the subject and teaching process as useful and fruitful.'

Justification *(around 1 page)*
State how your research study will benefit the general understanding of one of the SDGs. For example, how the outcomes of this research study can be used to accomplish the aims of the SDG you have chosen. Keep in mind that the SDG has to provide context for the development of the study. This video will help you better understand the SDGs and its context.

METHODOLOGY
Different methods and procedures apply for quantitative, qualitative and mixed research. We recommend you to use a mixed-method approach. In any kind of research proposal you have to take into account:

The study design: data and methods.
Sampling procedures: type selection.
Hypothesis, independent and dependent variables (if appropriate)
Data collection procedures: primary and secondary sources
Instruments used: available and validated tools.
Data analysis approaches.

In this link you can find some methodological resources.

The Study design *(from 1 to 2 pages)*

You have identified the research problem, reviewed the literature associated and clearly specified the research questions in the Introduction section. Under this heading, we ask you to describe data and methods.

- Effectively describe the data which will be necessary for an adequate test of the hypotheses and explain how such data will be obtained. (primary and secondary sources)
- Describe the methods of analysis which will be applied to the data in determining whether or not the hypotheses are true or false.

We list below some methods of analysis we think you can apply:

- Descriptive design. Descriptive studies describe people, products, and situations. Descriptive studies usually have one or more guiding research questions but generally are not driven by structured research hypotheses. Because this type of research frequently aims to describe characteristics of populations based on data collected from samples, it often requires the use of a probability sampling procedure, such as simple random sampling. Data from descriptive research may be qualitative or quantitative, and quantitative data presentations are normally limited to frequency distributions and summary statistics, such as averages. Customer satisfaction surveys, presidential approval polls, and class evaluation surveys are examples of descriptive projects.
- Causal design. Causality studies may be thought of as understanding a phenomenon in terms of conditional statements in the form, “If X, then Y.” This type of research is used to measure what impact a specific change will have on existing norms and assumptions. Most social scientists seek causal explanations that reflect tests of hypotheses. Causal effect (nomothetic perspective) occurs when variation in one phenomenon, an independent variable, leads to or results, on average, in variation in another phenomenon, the dependent variable.

- Exploratory design. The goal of exploratory research is to formulate problems, clarify concepts, and form hypotheses. Exploration can begin with a literature search, a focus group discussion, or case studies. If a survey is conducted for exploratory purposes, no attempt is made to examine a random sample of a population; rather, researchers conducting exploratory research usually look for individuals who are knowledgeable about a topic or process. Exploratory research typically seeks to create hypotheses rather than test them. Data from exploratory studies tends to be qualitative. Examples include brainstorming sessions, interviews with experts, and posting a short survey to a social networking website.
- Explanatory design. The primary purpose of explanatory research is to explain why phenomena occur and to predict future occurrences. Explanatory studies are characterized by research hypotheses that specify the nature and direction of the relationships between or among variables being studied. Probability sampling is normally a requirement in explanatory research because the goal is often to generalize the results to the population from which the sample is selected. The data are quantitative and almost always require the use of a statistical test to establish the validity of the relationships.
- Case Study design. A case study is an in-depth study of a particular research problem rather than a sweeping statistical survey. It is often used to narrow down a very broad field of research into one or a few easily researchable examples. The case study research design is also useful for testing whether a specific theory and model actually applies to phenomena in the real world.
- Historical design. The purpose of a historical research design is to collect, verify, and synthesize evidence from the past to establish facts that defend or refute your hypothesis. It uses secondary sources and a variety of primary documentary evidence, such as, logs, diaries, official records, reports, archives, and non-textual information [maps, pictures, audio and visual recordings]. The limitation is that the sources must be both authentic and valid.

Sampling procedures *(1 page)*
A Sample is a portion of the entire group you aim to research. (called a population). A Sampling procedure means choosing part of a population to use to test hypotheses about the entire population.A procedure is used to choose the number of participants, interviews, or work samples to use in the research.

You have to state what types of Sampling Procedures you choose.

- Purposeful - choose subjects that you believe will be able to provide you with important information. Types of purposeful sampling: “maximum variation”, “typical case”, “critical case” and “extreme or deviant case” (Patton, 1989, pg 100-107).
- Key informant - a specific person that you believe will give you the most information-sometimes used to develop interview questions or to begin snowball sampling.
- Snowball - you ask the participants to provide you with names of those that will be able to provide you with important information.
- Convenience - simply asking anyone to whom you have easy access. Avoid this if possible.
- Random table/random selection - when each person of the population has an equal chance of being selected. Selection is based on random procedures such as using a random table of numbers. (Choosing every fifth person is NOT a random selection.)
- Stratified sampling - “stratified” means choosing from various sub-groups. The population is divided into subpopulations and random samples are taken of each subpopulation. For example, stratified by gender. If the population has 25% females and 75% males, the sample should be chosen randomly by subpopulations and consist of 25% females and 75% males.
- Whole population - the entire population is used. (e.g., entire course, entire university, all students within a program, etc). This is especially true if the population is small.

Hypothesis and variables *(from 2 to 4 paragraphs)*
As pointed out by Orlikowsky and Baroudi (1991), a quantitative research methodology is appropriate where quantifiable measures of variables of interest are possible, where hypotheses can be formulated and tested, and inferences drawn from samples to populations. As you don't have the capacity to test experiments, the use of exclusive quantitative procedures are not possible.

In quantitative or mixed-methods research, the researcher seeks explanations for the defined problem. It is not adequate just to identify and associate key concepts and constructs underlying the target phenomenon or behavior. We must also identify and state patterns of relationships between these constructs. Such patterns of relationships are called propositions. A proposition is a tentative and conjectural relationship between constructs that is stated in a declarative form.

Example of a proposition is: "An increase in student intelligence causes an increase in their academic achievement."

The empirical formulation of propositions stated as relationships between constructs or variables is called hypotheses. Hypotheses can be made by combining constructs (propositions) or by combining variables (operationalised constructs).

Example: Since IQ scores and grade point average are operational measures of intelligence and academic achievement respectively, the above proposition can be specified in the form of the hypothesis: "An increase in students' IQ score causes an increase in their grade point average."

The hypothesis of a research proposal is normally based on theories or models intended to explain the problem, phenomenon or behavior of interest. The research goal is to analyze a situation that already exists. Hypotheses are made by propositions and constructs. Their associated variables (operationalized constructs) are all dependent and, contrary to an experimental project, they cannot be controlled by the researcher. Thus, the researcher should further operationalize variables by selecting correct indicators or ítems whose combination represents the variable. Relationships between variables will be tested by empirically measuring their items.

A successful research proposal should contribute to building better and more comprehensive theories that can explain a target phenomenon based on prior ones. As for the data, the researcher can collect them from primary (if

available and appropriate) and secondary sources. It is important to have a clear idea of what sources you will gather data in the study design process.

Example: What is the relationship between self-esteem and depression?
These two constructs refer just only to dependent variables, that means the researcher cannot control any defined variable. To test if there is any correlation between them, the researcher can use self-esteem as an independent variable operationalizing the construct by defining a person's self-esteem as an score obtained by using a validated test of self-esteem. Then, depression can be selected as a dependent variable and its operational definition would be also a person's score on a validated test of depression. The researcher can now correlate both numerical items.

Conclusion: Low self-esteem causes depression (if they correlate). But this result is just a theory based on the selected tests defining variables, researchers should check if other researchers defining same variables with different items get similar conclusions. This analysis will make the described theory and the existing theories studied more reliables.

As you see, once the type of research is selected, constructs from proposed hypotheses can be breaking down in operational variables and its items. Testing them are the operational objectives of the research.

Research objectives for the research proposal are:

1. Check if when self-esteem score is high, depression score is low
2. Check if when self-esteem score is low, depression score is high
3. Test if when using different validated test, results remain consistent

And so on…

Data collection procedures *(from 1 to 3 pages)*
Data collection is a process of collecting information from all the relevant sources to find answers to the research problem, test the hypothesis and evaluate the outcomes. Data collection methods can be divided into two categories: secondary methods of data collection and primary methods of data collection.

Secondary data is a type of data that has already been published in previous investigations, journals, online portals etc. There is an abundance of data available in these sources about your research area in any study. Therefore, the selection of secondary data to be used in the study plays an important role in terms of increasing the levels of research validity and reliability. Do not

mistake the use of bibliography with the description of the use of secondary data.
Primary data collection procedures can be divided into two groups: quantitative and qualitative.

Quantitative data collection procedures are based in mathematical calculations in various formats. Researchers often rely on quantitative data when they intend to quantify attributes, attitudes, behaviors, and other defined variables with a motive to either back or oppose the hypothesis of a specific phenomenon by contextualizing the data obtained via surveying or interviewing the study sample. Methods of quantitative data collection and analysis include questionnaires with closed-ended questions, methods of correlation and regression, mean, mode and median and others. You can consult any statistics manual. We have prepared some videos for you to better understand data collection and the data analysis processes.

Qualitative data collection procedures, on the other hand, are appropriate when the phenomena under study are complex, are social in nature, and do not lend themselves to quantification. Qualitative research is highly time consuming. Typically, qualitative methods are used when understanding the cultural context from which people derive meaning is an important element of a study. Such cultural context is usually not susceptible to quantification and aggregation and is, therefore, usually ignored in quantitative studies. Yet failure to understand cultural context may deprive the researcher of a real understanding of the problem at hand (&plan & Maxwell, 1994).
The qualitative researcher most often gathers data through observations “in the field.” There are many possible designs and procedures for qualitative research. Let’s offer some recommendations.

- Interviews lend themselves particularly well to the time constraints of the Master in Decision Making and Innovation.
- Focus groups. When the purpose of a study is to gain insights into attitudes of participants, the focus group is an appropriate method.
- While they are attractive, interviews and focus groups alone are insufficient to meet the goals of the study. The research work must include, as a necessary component, direct observations of individuals while they are performing tasks of interest.

What sort of research problem might lend itself to investigation with both qualitative and quantitative methodologies in the Master of Decision Making and Innovation?

Problems related to social phenomena should draw on theory or a body of empirical evidence to formulate and test hypotheses, yet be enriched by taking a holistic approach-one in which context and qualitative observation descriptions are vital. Because of the time constraints, not all data gathered are going to be analyzed thoroughly. Being a first time effort for the student, his/her research also may suffer some problems of planning and execution. Consequently, we may expect few substantive conclusions can be drawn. However, the principal purpose of the study is to provide a platform for learning methods rather than reaching substantive conclusions. We aim to ensure that once you graduate, you will be a competent consumer of research.
You have to make sure that the problem is framed in a manner consistent with a mixed methods to research -examining relationships or predictors in your quantitative methods and exploratory in the qualitative part. In most cases you will use qualitative and quantitative instruments.

Instruments used *(from ½ to 1 page)*
A research instrument is a tool used to collect, measure, and analyze data related to your subject. Research instruments can be tests, surveys, scales, questionnaires, or even checklists. To assure the strength of your study, it is important to use previously validated instruments. For instance, it is not advisable the student make up the questions in a survey. Taking into account the TFM's goals and given the constraints of time, budget (many instruments are not free), we recommend the student to be realistic in the selection of the instruments. Based in the research field, you can use specialized search engines to choose your instruments. We recommend you to use repositories like the Measurement Instrument Database for the Social Sciences (MIDSS). https://www.midss.org/about-us This site is designed to be a repository for instruments that are used to collect data from across the social sciences. Please use the site to discover instruments you can use in your own research. It accounts for 500 free instruments so far. There are many other repositories available on the internet.

Let's see an example: The student is doing his/her study in the application of positive psychology in companies and its impact in the workforce. As the student has previously learnt in the study design one of the theoretical concepts most related to positive psychology is 'happiness'. The search for both keywords has delivered 404 results in doaj.org. He/she thinks it appropriate to conduct interviews with employees as the main research procedure. Sh/e will make a stratified sample. Beforehand, he/she has found a validated instrument in the MIDSS repository. -Subjective Happiness Scale-

https://www.midss.org/content/subjective-happiness-scale

In his/her written product, under the heading -Instruments- in the methodology section, the student will describe what is the Subjective Happiness Scale (SHS) (it is a 4-item scale of global subjective happiness. Two items ask respondents to characterize themselves using both absolute ratings and ratings relative to peers, whereas the other two items offer brief descriptions of happy and unhappy individuals and ask respondents the extent to which each characterization describes them.)

As well, the student will relate his/her use of this instrument in regard to its validity and reliability in his/her research and other ones.

For each of the following statements and/or questions, please circle the point on the scale that you feel is most appropriate in describing you.

1. In general, I consider myself:

1	2	3	4	5	6	7
not a very happy person						a very happy person

2. Compared with most of my peers, I consider myself:

1	2	3	4	5	6	7
less happy						more happy

3. Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you?

1	2	3	4	5	6	7
not at all						a great deal

4. Some people are generally not very happy. Although they are not depressed, they never seem as happy as they might be. To what extent does this characterization describe you?

1	2	3	4	5	6	7
not at all						a great deal

Reference:
Lyubomirsky, S., & Lepper, H. S. (1999). A measure of subjective happiness: Preliminary reliability and construct validation. *Social Indicators Research, 46,* 137-155.

Data Analysis Approaches *(from ½ to 1 page)*
You have to explain in a brief manner how you are going to analyze the primary data you will collect employing the methods explained in the heading 'study design'..

There are differences between qualitative data analysis and quantitative data analysis. Qualitative data analysis works a little differently from quantitative data, primarily because qualitative data is made up of words, observations, images, and even symbols. Deriving absolute meaning from such data is nearly impossible. While in quantitative research there is a clear distinction between the data preparation and data analysis stage, analysis for qualitative research often begins as soon as the data is available.

In qualitative research using interviews, focus groups, experiments etc. data analysis is going to involve identifying common patterns within the responses and critically analyzing them in order to achieve research aims and objectives.

Data analysis for quantitative studies, on the other hand, involves critical analysis and interpretation of figures and numbers, and attempts to find rationale behind the emergence of main findings. Comparisons of primary research findings to the findings of the literature review are critically important for both types of studies – qualitative and quantitative.

Data analysis methods in the absence of primary data collection can involve discussing common patterns, as well as, controversies within secondary data directly related to the research area.

RESULTS *(from 2 to 3 pages)*

The Results section should only include the most relevant results that provide answers to the research question or the hypothesis. It is essential to include tables, graphs, and different figures that will support the results before developing them. The results should answer the research objectives you have set up in the Introduction and clarify if the research question or hypothesis is confirmed or refuted. In this section you should not include any assessment or comment about the results obtained, you have just to expose them. It is important to explain the size of the sample, a description of that sample, and the descriptive analysis of the most important variables.

Research that involves quantitative data analysis:

- Reserve your opinion. For now just show or describe your data.
- Provide a brief introduction regarding your data display.
- Overall findings. Begin the data displayed with the socio-demographic characteristics of the subjects first, followed by other major variables.
- Next, talk about the specific findings. Present other descriptive and inferential statistics, among the variables, that were chosen by the student researcher to answer the research hypotheses or research questions the student wishes to be able to answer in this study.
- Make sure to explain whether or not each hypothesis was supported or not, the statistical procedure(s) used to make this determination, and the level of significance value.

Research that involves qualitative data analysis:

- Similarly, reserve your opinions.
- Describe anything you think is important about the overall data gathering process.
- Describe how you analyzed the data.
- Describe the themes/findings in categories that you and your tutor have agreed on.
- You will be depicting quotes, narrative, artifacts, and other types of qualitative data.
- Note any additional findings that you obtained from the study here.

CONCLUSIONS AND DISCUSSION *(from 3 to 4 pages)*
This is where the researcher summarizes the work of the Study and draws conclusions. The conclusions and discussion section should answer the question: What do your results mean?

You should present the major findings that describe critical influences/relevancies to the variables of interest in this study. You will discuss findings (from the RESULTS section) in terms of whether or not your research questions or hypotheses were confirmed, which ones, and how they compare to, or contrast with, the literature review found in the INTRODUCTION section.

You can provide your personal opinion regarding the literature review, the findings, or any unusual observations that emerged from the research. You can also make recommendations and project future research that is needed in this area of study.

Mentioning how the findings could be applied is valued since you not only consider the theoretical research but the feasibility of the findings.

Glossary (optional) *(1 page)*
Provide both conceptual and operational definitions for any concepts or phrases that are either important or may be unclear to the reader. We do not ask that the student researcher define *all* the research terms. Here you can find a guide on how you can include a Glossary in your research.

Acknowledgments (optional)
List here those individuals who provided help during the research (providing help, writing assistance or proof reading the research, etc.).

References
Cited references in the test and references included in the list should follow the latest -APA 7th edition- reference style (Manual of the American Psychological Association, 7th edition: http://www.apastyle.org/).

Annexes
If there are more than one annexes, they should be identified as A, B,..

EXTRA RESOURCES

SDGs EXTRA CONTENTS:

SDG Presentation - https://goo.gl/9MoQSM

Agenda for Sustainable Development - https://goo.gl/fKcWcG

Companies and SDGs - https://goo.gl/7CYgHX

Global Compact - https://goo.gl/GMwKd4

MDG Report - https://goo.gl/yfHLoV

MDGs Declaration - https://goo.gl/1Nx8XR

SDGs Declaration - https://goo.gl/kb53hf

The Sustainable Development Goals Report - https://goo.gl/mmmFvY

BIBLIOGRAPHIC SEARCH AND BIBLIOGRAPHY MANAGEMENT TOOLS (Zotero)

VIDEO - Sharing experiences: ZOTERO - *Lucía Fuentes, Tutora Programa GAIA y* Hiscio Belluga, Alumno de GAIA.

Zotero installation guide -
https://drive.google.com/open?id=1LyhfuEhjrkoX4ddwVe8hOG-QDGd-Su1z

Taking into account your first general reflexions, make a keywords list to organize your bibliographic search. Create your personal ZOTERO account (https://www.zotero.org/), generate a list of bibliography in a google docs and share it with your tutor.